

Justicia nevlingii (Acanthaceae), a New Species from Mexico

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ABSTRACT. A new species of *Justicia* with heteromorphic bracts, *J. nevlingii*, is described from southern Mexico. The species is compared to two other heteromorphically bracted species from Mexico and Central America, *J. chol* and *J. costaricana*. It differs from these in several features, including its 4-aperturate pollen.

In 1974, Larry Nevling of the Field Museum of Natural History called to the attention of the senior author an unusual collection of Acanthaceae from Veracruz representing an unknown species. Other collections resembling this species from Veracruz and Chiapas have since been assembled and studied. They are described below as a new species of *Justicia* with heteromorphic bracts.

Justicia nevlingii Wasshausen & T. F. Daniel, sp. nov. TYPE: Mexico. Veracruz: Hidalgotitlán, 0–2 km del Plan de Arroyo–Alvaro Obregón, 17°01'N, 94°40'W, 14 Apr. 1974, *J. Dorantes et al.* D-2799 (holotype, US; isotype, F). Figures 1, 2.

Herba perennis usque ad 1.5 m alta. Folia petiolata, laminae ovatae, 6.5–18.5 cm longae, 3–10.4 cm latae. Spicae terminales et axillares, densae, pedunculis et rhachidibus dense pilosis. Bracteae heteromorphae; bracteae fertiles petiolatae, obovatae vel ellipticae, 5.5–12 mm longae, 2.7–6.5 mm latae; bracteae steriles lineares-lanceolatae vel lineares vel subulatae, 2–5 mm longae, 0.3–0.5 mm latae. Calyx 5-lobus. Corolla alba vel flavida vel cremea, 9–10 mm longa, extus pubescens trichomatibus eglandulosis. Thecae antherarum 2, superpositae, glabrae, theca inferiore basi calcarata; pollen 4-aperturatum. Capsula 7–8.5 mm longa, pilosa. Semina 2.

Erect, perennial herbs to 1.5 m tall. Stems subquadrangular, quadrifariously pilose with trichomes eglandular, appressed and spreading, 0.7–2 mm long, multi-septate with maroon septae. Leaves petiolate, petioles 1.5–7.2 cm long, densely pilose, blades ovate to elliptic, 6.5–18.5 cm long, 3–10.4

cm wide, short-acuminate at apex, obtuse or rounded to subattenuate at base, entire to sinuate, upper surface glossy, sparingly pilose with trichomes appressed, lower surface more densely pilose (especially the central and lateral veins) with trichomes appressed and spreading, to 1 mm long. Inflorescence of (axillary and) terminal dense panicles of spikes to 15 cm long and 1.5–4.4 cm diam., erect or ascending, rachises densely pilose with trichomes sordid, erect, to 1 mm long. Floral bracts heteromorphic; fertile bracts petiolate, obovate to elliptic, 5.5–12 mm long, 2.7–6.5 mm wide, acute to truncate-apiculate at apex, abaxial surface pubescent with antrorse-appressed eglandular trichomes 0.1–0.5 mm long and glandular trichomes to 0.2 mm long, margin ciliate with cauline type trichomes; sterile bracts linear-lanceolate to linear to subulate, 2–5 mm long, 0.3–0.5 mm wide. Bracteoles oblanceolate, 4–9 mm long, 1.2–2.2 mm wide. Calyx deeply 5-lobed, 3–5 mm long, lobes lanceolate, 2.5–4 mm long, 0.5–0.6 mm wide, puberulous. Corolla white to yellowish to cream, 9–10 mm long, externally pubescent with eglandular trichomes 0.2–0.5 mm long; tube 5–5.5 mm long, 0.8 mm diam. at base, 3 mm diam. at apex; limb 2-lipped, upper lip erect, rugulate, ovate-lanceolate, 3–4.5 mm long, 2 mm wide, 2-lobed at apex, lobes ca. 0.25 mm long and wide, rounded, lower lip \pm spreading, 3-lobed, 3.5–6 mm long, 3 mm wide at base of lobes, lobes obovate, 1.2–1.5 mm long, 1.2–1.5 mm wide, rounded at apex. Stamens inserted near apex of corolla tube, 4 mm long, filaments glabrous, thecae superposed, glabrous, upper theca ca. 1 mm long, lower thecae ca. 0.8 mm long, calcarate with blunt appendage ca. 0.3 mm long; pollen prolate 4-aperturate, apertures flanked on each side by a \pm continuous band of exine and a pseudocolpus (Fig. 2); 2 staminode-like protrusions of corolla present near base of filaments, 0.4–1.2 mm long, densely villous. Style 6.5–7 mm long, glabrous, stigma 0.2–0.3 mm long. Capsules 7–8.5 mm long, pilose. Seeds 2,

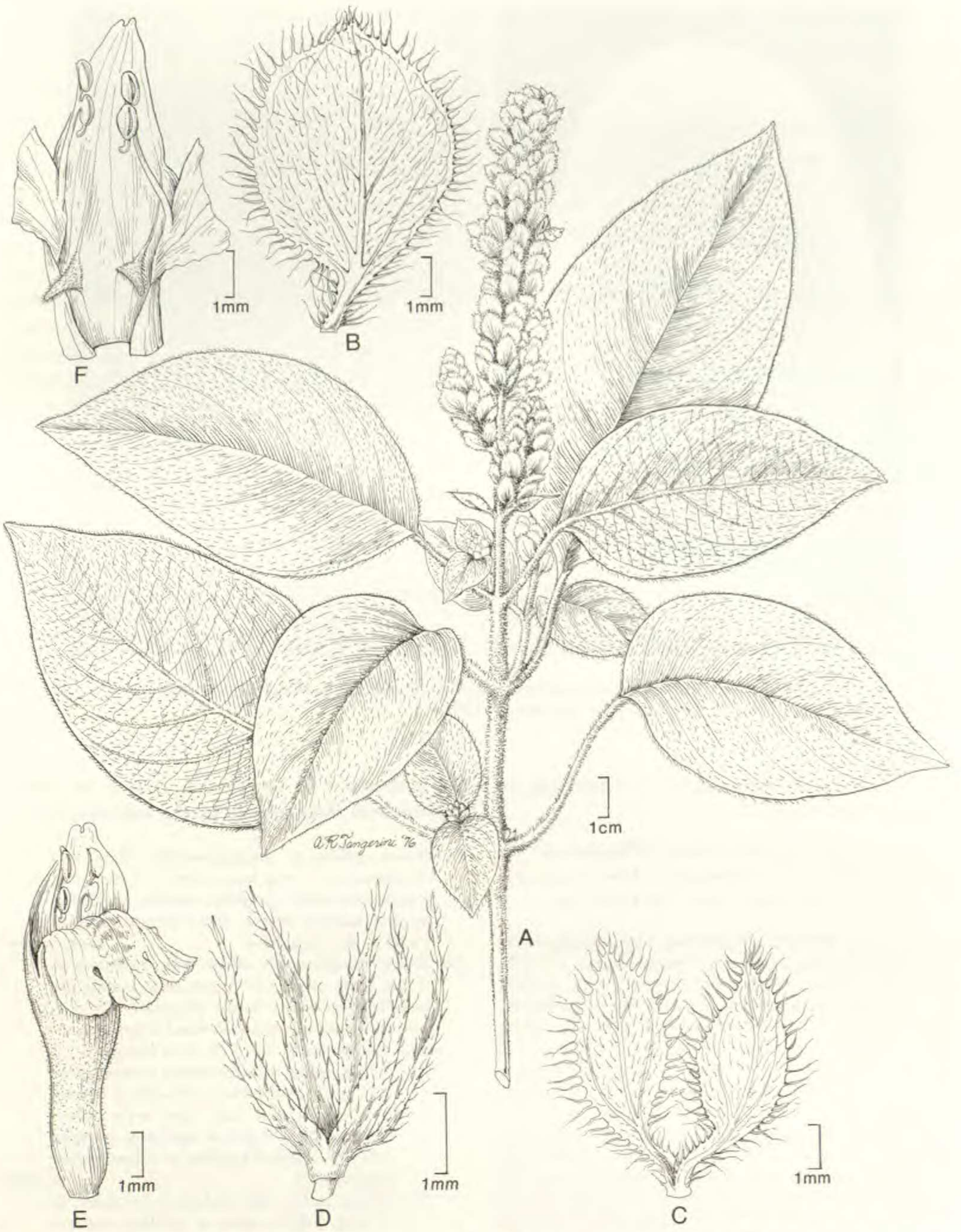


Figure 1. *Justicia nevlingii* Wasshausen & T. F. Daniel (*Dorantes et al.* D-2799). —A. Habit. —B. Bract. —C. Bracteoles. —D. Calyx lobes. —E. Corolla and stamens. —F. Expanded corolla, stamens, and staminode-like protrusions.

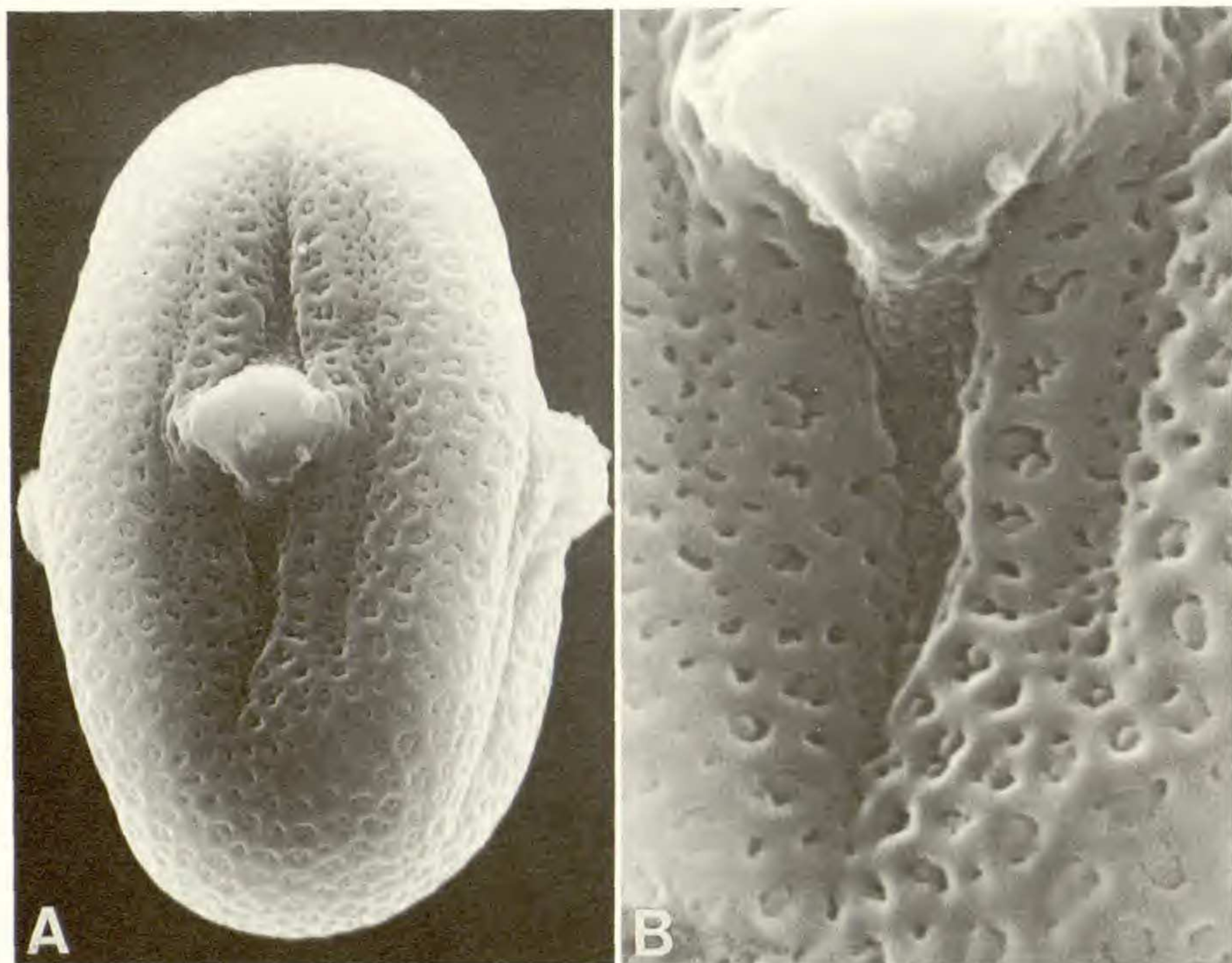


Figure 2. Scanning electron (SEM) photomicrographs of pollen of *Justicia nevlingii* (Dorantes et al. D-2799). — A. Equatorial view, $\times 2800$. — B. Portion of aperture, $\times 7000$.

spherical to discoid, flattened, 2.1–2.8 mm long, 2–2.5 mm wide, smooth.

Distribution. Southern Mexico (Chiapas and Veracruz); plants occur in lowland and lower montane rainforests at elevations from 130 to 470 m.

Paratypes. MEXICO. **Veracruz:** Mpio. Hidalgotitlán, 0–2 km road Plan de Arroyo–Arroyo Alegre, 17°15'N, 94°35'W, 23 Apr. 1974, *Jésus Dorantes et al.* D-2964 (F, US); Mpio. Hidalgotitlán, between Hnos. Cedillo-Augustín Melgar, 17°13'30"N, 94°35'W, 26 Apr. 1974, *Mario Vázquez et al.* 411 (F, US); Las Choapas, Las Cruces, 14 July 1970, *A. Gómez-Pompa & L. Nevling* 1522 (F, MEXU); Mpio. Hidalgotitlán, La Laguna, Uxpanapa, 29 Mar. 1974, *A. Gómez-Pompa & L. Nevling* 5183 (F). **Chiapas:** Mpio. Ixtacomitán, above Ixtacomitán, 10 May 1973, *D. Breedlove* 35058 (DS, MEXU); St. Bartolo, Apr. 1840, *J. Linden s.n.* (G, P); along Río Pichucalco, 3 km NE of Pichucalco toward Villahermosa, 17°32'N, 93°04'W, 2 July 1969, *B. Marcks & C. Marcks* 913 (LL, WIS); 37 km NW of Bonampak, 6 km NNW of Nuevo Guerrero, *G. Davidse et al.* 20534 (BM, LL, MEXU); between Pichucalco and Rayón near Solosuchiapa, cuadrante 57-A, *J. Chavelas P. et al.* 442 (MEXU).

Justicia nevlingii resembles both *J. chol* T. F. Daniel (Chiapas) and *J. costaricana* Leonard (Costa Rica) by its heteromorphic bracts and staminode-

like protrusions of the corolla. It may be distinguished from these species by the following key:

- 1a. Bracts eciliate or inconspicuously ciliate with trichomes to 0.2 mm long; calyx 5–7 mm long; corolla externally glandular; cauline trichomes lacking maroon septae; cloud forests at 900–1550 m in Costa Rica *J. costaricana*
- 1b. Bracts conspicuously ciliate with trichomes to 2 mm long; calyx 2.5–5 mm long; corolla externally eglandular; cauline trichomes with conspicuous maroon septae; lowland to lower montane rainforests at 50–470 m in Mexico.
 - 2a. Young stems with trichomes concentrated in 2 lines; inflorescence of axillary spikes; bracteoles 0.4–1 mm wide; style pubescent; seeds 4, 1.3–1.6 mm long, covered with low rounded papillae or ridges; pollen 3-aperturate *J. chol*
 - 2b. Young stems with trichomes restricted to 4 lines; inflorescence of (axillary to) terminal panicles of spikes; bracteoles 1.2–2.2 mm wide; style glabrous; seeds 2, 2.1–2.8 mm long, smooth; pollen 4-aperturate *J. nevlingii*

Graham (1988) stated that the pollen of *Justicia* is either 2- or 3-aperturate but that 4-aperturate pollen (not confirmed by her study) had been reported in a few New World species. Daniel (1990,

1993) documented 4-aperturate pollen in several species of *Justicia* (i.e., *J. angustiflora* D. N. Gibson, *J. tabascina* T. F. Daniel, and *J. valvata* T. F. Daniel) and has since observed it in several others (e.g., *J. multicaulis* Donnell Smith, *J. silvicola* D. N. Gibson, and *J. warnockii* B. L. Turner).

Graham (1988) also noted that all the species of *Justicia* that she had observed have an androecium of two stamens and no staminodes. *Justicia nevlingii* and the two other heteromorphically bracted species of *Justicia* noted above exhibit two staminode-like protrusions near the base of the filaments. It is not known whether these protrusions technically are staminodes or whether they are merely thickenings of the corolla near the point of insertion of the filaments. Whatever their origin, they appear to be present in species of *Justicia* with heteromorphic bracts. Heteromorphically bracted species of *Justicia* are now known from Mexico and Central

America, and they undoubtedly occur in South America as well. Determining whether they constitute a monophyletic infrageneric taxon within *Justicia* deserves additional study.

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Literature Cited

- Daniel, T. F. 1990. New and reconsidered Mexican Acanthaceae. IV. Proc. Calif. Acad. Sci. 46: 279-287.
- . 1993. New and reconsidered Mexican Acanthaceae. V. Contr. Univ. Michigan Herb. 19: 271-291.
- Graham, V. A. 1988. Delimitation and infra-generic classification of *Justicia* (Acanthaceae). Kew Bull. 43: 551-624.